

MONTANA

Wildlife

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Information-Education Division



STATE OF MONTANA

Governor	J. Hugo Aronson
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Wilderness and Wildlife

We are becoming increasingly aware of the important part wilderness is playing in our wildlife program in general and specifically in the preservation of several important game and fish species.

Big game hunting is earning an important place in Montana's outdoor recreational program. Much of the high-quality aspect of this sport, particularly in regard to hunting the rarer species, is due to the remote regions in which these animals are found. A great deal of the finest sport hunting in the state today lies within the boundaries of designated wilderness and wild areas.

In regard to specific species, the grizzly bear population has reached a critical low in the United States. Total elimination has taken place throughout the greater part of its former range. It has been found that the grizzly shuns areas dominated by man's activities. The chief hope, therefore, for the survival of this highly prized game species lies in the preservation of a reasonable amount of wilderness range.

The native black-spotted cutthroat trout is in jeopardy in Montana. The disappearance of this valuable game fish is directly attributable to habitat destruction as well as the introduction of non-native fishes. Only a few waters, and they mostly in remote areas, still have pure strains of the original cutthroat.

It is an important and practical consideration of fish management that these rare strains be preserved. They will be needed for introduction into waters that are presently barren and will be the raw material for creating improved strains as needs arise. Then, too, cutthroat are important for the particularly rewarding type fishing they provide.

The salvation of these native strains of cutthroat lies in the more remote inaccessible waters, and in particular—wilderness areas. Here the habitat will be preserved and incompatible exotic fish excluded. It is very evident that those who seek native cutthroat will not hesitate to expend the necessary energy to reach these more remote regions. This is clearly testified by the resident and non-resident fishermen enjoying this sport in wilderness areas.

A further value of wilderness has often been realized. This is the importance of having undisturbed plant and animal communities available for scientific studies. It is felt that only with such "controls" can the effects of man's many modifications be properly judged, and unwise practices avoided.

In summary, we feel that we are obligated to furnish the highest quality hunting and fishing possible. This is becoming an increasingly difficult task in the face of rapidly mounting hunting and fishing pressures and the continual shrinkage of the more desirable areas in which these activities may be enjoyed.

We look, therefore, to a planned wilderness preservation system as insurance that we may continue to provide outstanding recreational opportunities, so important to Montana and the entire nation. We agree with the principles expressed in the proposed wilderness legislation. We believe that this program may be accomplished without jeopardizing other important uses of public lands. We sincerely hope that national wilderness preservation may soon become a definite policy of congress.



Trail Trout

Series I — Racetrack-Meadow Lakes Basin

**By Robert C. Averett and Arthur N. Whitney
Fisheries Biologists**

THIS WORK WAS SUPPORTED BY FEDERAL AID IN FISHERIES RESTORATION

Did you fish in any of Montana's back country lakes last year? If you did, then you have enjoyed a sport that is becoming increasingly popular in the Land of Shining Mountains. Each year, more and more anglers become willing to pay with some extra physical effort for the privilege of enjoying their sport away from growing crowds on the valley floors. This increasing group of Treasure State anglers has discovered a type of fishing that is perhaps more demanding of their ef-

forts, more esthetically rewarding and far more unpredictable than any of our others, whether they be big lakes, rivers, reservoirs or ranch ponds.

The Montana Fish and Game Department conducts biological surveys on a number of mountain lakes each year, surveys which are designed to evaluate each lake as a present or potential trout fishery. Records are made of the present trout population, depth of water and available spawning areas for each lake. This infor-

mation is needed so that sound biological management can be applied to our back country fishing waters.

Our surveys have shown that Montana's mountain lakes may range all the way from those with no fish life in them at all to some that are actually over-populated with trout. Some may afford good living conditions for trout while others may be incapable of supporting any fish life. Some may have excellent spawning facilities while in others the fishery may be entirely dependent upon artificial stocking.

However, it is not the intent of our survey program to merely locate barren lakes so that they may be stocked. Rather, our management plan is to collect essential physical, biological and chemical data on our more important mountain lakes so that we may (1) stock trout only in reasonably accessible lakes where we can best expect to produce good fishing; (2) refrain from planting waters which may be harmed by stocking or waters where planted fish would be wasted; and (3) retain some remote mountain lakes in their present "fishless" condition so that they may be quickly put into production when they are required by the future fishing needs of an increased number of anglers.

You, Mr. Sportsman, may ask "What about and where are these back country lakes? How do I know which ones have fish in them, and which ones don't?" Well, let's talk about one group of them at a time. In

this issue of "Montana Wildlife", let's take a trip into the upper Racetrack-Meadow Lakes Basin. This area is located west of Anaconda, in western Montana, and is partially accessible from the Fred Burr Lake road. There are eight lakes in this general area that have been surveyed by fisheries field crews of the Montana Fish and Game Department. These eight lakes are: Big Racetrack Lake, Fisher Lake, and Meadow Lakes Nos. 1, 2, 3, 4, 5, and 6.

Both Big Racetrack and Fisher Lakes are accessible by road. But you had better have an all-wheel drive vehicle for the road is rough, steep and sometimes muddy. These two lakes are impounded; that is, they have dams at their outlets. Early in the summer you will find them both full of water. As the summer progresses, this stored water is released into Racetrack Creek to be used for irrigation in the lower Racetrack Valley. Water drawdowns such as this make trout management difficult. The shallow shore zone is the productive area of a lake. Here is where the fish food is produced. When water is periodically removed from this area a vital part of the fish food chain is lost.

Big Racetrack Lake is stocked regularly with rainbow trout. Population samples from the 1958 survey showed that these rainbows ranged from eight to fifteen inches in length. The lake is about 50 acres in size and has a maximum depth of about 80 feet when full of water. Many fishermen take boats to this lake, how-



ever it can easily be fished from shore. There is plenty of room to camp on the shore and it is an excellent lake for the fishermen who want to get into the back country without roughing it.

Just east of Big Racetrack Lake is Fisher Lake. This lake is much smaller and has a maximum depth of 38 feet when full. Fisher Lake contains both rainbow and cutthroat trout. Information collected during the 1958 survey indicates that fish taken from Fisher Lake range from 8 to 13 inches in length. In past years, it has been stocked with hatchery trout but because of its small size and extreme drawdown, it is doubtful if this lake will ever become a consistent producer of trout.

Fisher Lake is at the end of the road. From here a trail takes us into the Meadow Lakes Basin.

There are six Meadow Lakes in the basin and five of the six contain trout. The first lake on the trail is Meadow Lake No. 4. It is about a two-hour walk from the road's end at Fisher Lake. There are several good camp sites on the shore of Meadow Lake No. 4 and the remaining five Meadow Lakes are easily reached from here. Just north of the lake is a broad meadow, which has enough feed to keep several head of pack stock content for a few days. Presently, Meadow Lake No. 4 has a low fish population. It has been placed on the planting schedule and is to receive 6,000 rainbow trout

during the summer of 1959. This lake is from 12 to 20 acres in size and can easily be fished from shore.

About one-half mile southeast of Meadow Lake No. 4 is Meadow Lake No. 3. Meadow Lake No. 3 contains some lunker rainbow trout and during the 1958 survey a five pounder was taken here. Fishermen have reported similar catches. No trout plants are planned for Meadow Lake No. 3 in the immediate future.

Southwest from Meadow Lake No. 4 the trail leads us to lakes Nos. 5 and 6. No fish were seen or taken in Lake No. 5 during the 1958 survey. As a result, it is to be planted with some 3,000 rainbow trout during the summer of 1959. It will be several years, however, before these fish are large enough to catch.

Meadow Lake No. 6 is a small, shallow lake with no fish. Because of its small size and shallow depth it is not considered worthy of trout stocking.

Now let's go back to our camp on Meadow Lake No. 4. About an hour's hike east of our camp is Meadow Lake No. 2. Lake No. 2 does not contain many trout but as in Lake No. 3 the trout are quite large. This is one

of the largest lakes in the Meadow Lakes Basin. A plant of rainbow trout is scheduled for it in 1959.

If we should walk about 15 or 20 minutes farther east, we would come to Meadow Lake No. 1. Lake No. 1 is about the same size as No. 2. It has an excellent population of smaller rainbow trout which averaged better than eight inches in length during 1958. Another plant of rainbow trout is scheduled in 1959. Here is a place where even the novice fly fisherman can make a good showing.

Besides being close together, the Meadow Lakes are all accessible by good trails. They are located in some of the finest back country of western Montana, so for the angler who wants to hike on easy trails and try his luck on several bodies of water the Meadow Lakes Basin is the place to go. Remember, though, if you plan to drive to the end of the road at Fisher Lake you had better have an all-wheel drive vehicle.

Well, Mr. and Mrs. Montana Fisherman, there you have it—our first report to you about our back country fishing areas. Remember, these are your lakes. Be careful with fire and please leave a clean camp.



Bruin on the Carpet

Some Facts About Bear

By Fletcher Newby and Bob Brown
Resources and Predator Investigations Biologists

Sportsmen know the black bear as a fine game animal. The general public knows him better as "Smokey"—symbol of forest conservation. Stockmen in numerous areas sometimes know him as a predator.

These different impressions we have of bruin—game animal or predator—stem largely from his feeding habits. A close look at the normal diet of black bears will help us conclude which impression is correct and will help answer the often discussed question: "Do bears commonly prey on livestock or is it only the occasional renegade that does so?"

Although studies of bear food habits have not been conducted in Montana, there is a good deal of information available from other states. This information clearly shows that

throughout their range the normal diet of black bears is primarily **plant material**. Insects are eaten when they are available, but only a comparatively small amount of animal material is eaten, and that is primarily carrion.

A bear's taste for ripe meat may be his undoing. Unless the carcasses of domestic stock, which have died from disease, poisonous plants, or other causes, are found before a bear reaches them, the bear is often blamed for killing the animals.

It's only natural for herders or ranchers to reach such conclusions since even veterinarians have trouble determining the true cause of an animal's death if much time had passed since its fate. Again, some bears do become stock-killers and cast suspicion on the rest of their kin.

Even though bears are classified as game animals, stockmen may legally destroy stock-killers. Both known and suspected stock-killers, or even those threateningly near herds or flocks, are often shot by herders. If a bear is too wary to be shot, a local U. S. Fish and Wildlife Service hunter is usually called in to trap the troublemaker or to hunt him down with dogs.

The number of black bears taken by government hunters increased steadily from 1955 to 1957. In 1955, 123 bears were destroyed, in 1956—151, and in 1957—158. The 1957 kill by government hunters was nearly one-fourth the legal hunter kill of 685 for that year. When allowing for an additional, but unknown, number killed by stockmen, it must be conceded that one-third to one-half as many bears were killed in control efforts as were legally killed by sportsmen.

The Montana Fish and Game Department has no argument with destruction of proven stock-killers. The sooner such animals are removed from ranges, the better. Our concern over the killing of supposedly predatory bears is caused by facts learned through studies on bear-livestock depredations in several other states. Let's consider a few excerpts from the reports of these investigations:

Colorado:

Twelve cases of reported bear predation on livestock were investigated in Colorado in 1951. Of the

twelve, three were definite bear kills, four were attributed to other causes, such as poisoning, and in five cases the cause of death could not be determined. This author made the following statement: "One could say that during the past year, **at least** 50 percent of the livestock predation losses attributed to bears were not justifiable and death came from another source." Investigation of five other reports of stock losses to bears in Colorado showed only one to be valid; three were questionable, and one was definitely due to other causes.

Wyoming:

An investigation of grizzly predation on cattle in Wyoming brought forth the following comments relative to black bears: "In the area where the grizzly was observed, predation on cattle was rather consistent, while the information received in letters from range men indicates that black bear predation on cattle is highly sporadic. In a letter from a regional forester is this statement about black bear: 'The predation is mostly confined to sheep, although in one case, a calf was attacked.'

"A forest ranger in Colorado writes: 'The killing of sheep by bear in this section is common; however, I have had rare reports and in only one case have I ever found any cattle that I believed were killed by a bear, although they work on nearly every carcass I find on the range, and for this reason one doubts most of the cattle killings reported for bear.'



Hunters throughout the United States are becoming increasingly aware of the value of bears as game animals.

—Photo by Hector LaCasse

"There have been so many misinterpreted cases, and the bear has been unjustly accused so often, that every reported incident is seriously doubted by experienced range men.'"

California:

An article written by a state hunter in California points out that most alleged cases of stock-killing by bears are actually instances of carrion-feeding with the activities of the bear obscuring the real cause of death.

Maine:

The nature of bear damage cases in this state is illustrated by a summary of 60 investigations conducted by game biologists during a recent study. Sheep were the most commonly attacked animals and accounted for 32 of the investigations. Of the 77 sheep involved, 20 kills were so old that no conclusions could be drawn; 33 were conclusively bear kills; and 23 sheep and 1 goat appeared to represent a false claim. Reports of 8 cases in which 10 cattle



This rotted log was torn apart by a bear searching for insects.

—Photo by Bob Cooney

were killed or injured showed 5 by bears, 3 unknown, 1 probably human thieves and 1 barbed wire tear.

Virginia:

In Virginia, approximately 90 percent of the stock killed is sheep. Of all livestock, cattle are killed least often. The Virginia writer comments, "Actually, only a very few bears become stock-killers."

Because of the conclusions reached in these investigations, we questioned if all the 158 bear killed during 1957 were guilty of killing or molesting stock or destroying other property. The Fish and Game Commission has a responsibility to protect bears not involved in depredations. In order to prevent unjustified destruction of black bear which might be carrion

feeding or ranging in the vicinity of a livestock carcass, the commission signed a memorandum of understanding with the Governor's advisory committee on predatory animal control. This memorandum states that when government hunters receive a report of livestock loss where bears are suspected, they will immediately notify the Fish and Game Department so that the case may be investigated by the local fish and game warden.

Forty-nine such investigations were made during 1958. Of these, four cases involved reported cattle kills, four involved cattle molesting, 35 involved reports of sheep kills and the remaining six were concerned with the destruction of other prop-

erty such as beehives and fruit trees. Following the pattern described in other states, only one of the four cattle depredation cases was found to have resulted from a bear attack. In two of the four cattle molesting cases, bears were determined to be endangering stock to the extent that control measures were advised. Investigations showed that bears were responsible for losses of sheep in 31 of the 35 cases. Thirty-nine bears were taken by government hunters and seven by wardens or ranchers in these depredation cases. No control measures were taken following five of the investigations.

Twenty-two additional black bears were taken following depredations reported by government hunters but not investigated by fish and game wardens. Twenty-four of these depredations involved sheep and one involved damage to beehives. No control action was taken in one cattle and one sheep case as bears were not considered responsible for the losses.

Wardens did not receive reports of bear depredations which involved one case concerning cattle, seven concerning sheep and one concerning orchard damage. Twelve bears were taken by government hunters in these cases.

Through misinterpretation of terms in the memorandum of understanding a number of cases of livestock molestation were not reported to the department. The predator control administrator of the U. S. Fish and Wildlife Service informed us that about

15-20 bears were killed in these cases. Even if these bears are added to the 73 bears known to have been destroyed, only 57 percent as many bear were killed in 1958 as in 1957. Food conditions may have been responsible for part of this decrease, since 1958 was a good berry year in many areas.

The results of the 1958 investigations are in general agreement with the reports of other states. Occasionally, individual bears do become stock-killers. Sheep are preyed upon most often; cattle are rarely attacked. Careful investigation (before control is applied) will reduce misinterpretation of carrion feeding and unwarranted destruction of bear. Reports from other states stress that, since only individual bears are stock-killers and since damage is a local problem, control should be aimed at eliminating only the proven killers. Comments from these other states are of interest.

Wyoming:

"The results of either of the above methods (trapping or hunting with dogs) would probably be fairly satisfactory where there was a sincere, intelligent effort at selective control."

California:

"Therefore, we advocate to others the policy we follow ourselves, which is to eliminate the bear that becomes an economic menace, but leave unmolested the great majority who lead a normal career, considering them game animals like deer and elk, hunting them in numbers and in

seasons provided by law and common sense. Most wildlife under present day conditions may suddenly become a pest and a nuisance and we should be fair enough not to pick on one individual animal to suffer our displeasure without at least a reasonable investigation to determine the justification. . . ."

Virginia:

"It is indicated that the control of agricultural damage caused by black bear is more of a local than a state-wide problem. The elimination of the individual bear which is committing acts of depredation, rather than the inauguration of a general bear-control program, appears to be the most effective way of holding agricultural depredation by bears to a minimum in Virginia."

The consensus among game and range managers is that bear control

should be conducted only on a selective local basis. Waste in indiscriminate control is not limited to loss of time and money but also wastes a game animal prized as a trophy by many sportsmen.

Little is known about the food habits of the black bear in Montana. Less is known about how far bears may travel and how numerous they may become in various types of habitat. In addition to continuing investigations of reported bear depredations, the department is beginning a research program to fill the gaps in our knowledge of the black bear. Progressive management cannot be based on opinions. Application of research findings will mean better protection for livestock and better bear hunting for Montana sportsmen.

SPACE-AGE GAME MANAGEMENT
DEMANDS FACTS.



An historical landmark is seen from the picturesque Missouri.

—Photo by Bill Browning

MONTANA FLOAT TRIPS

Boat enthusiasts, who anticipate a Montana float trip, will find this state has much to offer. Some rivers flow through primitive country where there are no roads, fences, houses, or other evidence of civilization.

Some boisterous streams are characterized by raw, swift white water—no place for an amateur! Still others slide lazily along and present few hazards.

Whatever kind of float trip you want, you'll probably find it here. But leave hazardous waters to the

experts. Don't turn your vacation into a tragedy.

Standard gear for the floater, not including safety equipment required by law, should be:

- Fishing tackle
- Mosquito lotion
- Matches in a waterproof case
- Camping gear, food and drinking water necessary for the trip (Don't forget an axe)
- Bailing bucket
- Adequate supply of gasoline and oil

An anchor and anchor line
First-aid kit and cream or oil to
prevent sunburn
Necessary clothing for "unusual"
weather
Plenty of shear pins
Before starting a trip, **inquire lo-
cally as to river conditions and
hazards.**

Montana's Water Safety Law

During the 1959 legislative session, laws were enacted to regulate the licensing of boats and the use of boats, vessels and other water equipment.

A segment of the law requires that every vessel shall have aboard one life preserver, buoyant vest, ring buoy, or buoyant cushion for each passenger. Any person or persons twelve years of age or younger who occupy a vessel in motion must have a life preserver fastened to his or her person.

The above mentioned equipment must be in good condition and of the type approved by the U. S. Coast Guard.

Vessels must also be equipped with lights, fire extinguisher equipment and flame arrestors for gasoline-driven craft.

Vessels powered by machinery of more than ten horsepower must be licensed. Out-of-state vessels already covered by a license of a federally approved numbering system must be issued a Montana number only if they have been in Montana for a period of more than 90 consecutive days.

For further information write to the Montana Fish and Game Department, Helena, Montana.

POPULAR FLOAT STREAMS SOUTHWEST MONTANA:

Presently, the Big Hole, Madison and Yellowstone Rivers are most popular for float trips in southwestern Montana. Other smaller rivers may be floated but require considerable skill and contain the hazards of de-watering and stock fencing.

Fishing on these rivers rivals the best. Though other species are taken, they are predominantly brown trout waters.

Big Hole River:

Most floating on the Big Hole is confined to that part of the river below Divide Dam (approximately mid-point in the river drainage area). This portion of the river has many deep holes and is good fishing. Most of the trips wind up at one of the bridge crossings below Glen or near Twin Bridges.

Madison River:

Float trips on the Madison are limited primarily to the stretch of river below Varney Bridge approximately 13 river miles above Ennis, Montana. An area above Varney Bridge is closed to fishing from boats.

This float could end at Ennis Lake or the bridge at Ennis. It is a comparatively easy stretch of water but the river does break up into many channels.



Headin' for trouble! This rough water on the Madison is no place for beginners.

—Photo by Bill Browning

The second float permitted on the Madison would be from below the Ennis Lake Dam to the bridge on the Norris-Bozeman road. Another interesting float would be from the Norris Bridge to the bridge at Three Forks, Montana. Rattlesnakes are common along the lower stretch of the Madison, especially in the Beartrap area. So be careful when ashore. Remember, rattlers will sometimes strike without warning.

The Madison, of course, provides excellent fishing. The upper portion is ideal for brown trout and is probably the most popular area on the river for floating.

The float below Ennis Lake through the Beartrap Canyon is probably the most hazardous afforded by the big rivers in southwestern Montana. There are many rocks and small falls. We would seriously recommend that this float **not** be attempted by inexperienced persons! The area is inaccessible and, in case of trouble, the consequences could be quite serious.

The lower float on the Madison River is one of the most ideal. This stretch of river is large and meandering and affords no serious obstacles to floating.



Takin' it easy on a peaceful float down the Yellowstone.

—Photo by Bill Browning

Yellowstone River:

The Yellowstone River is presently being floated in its entirety. The upper section from the Yellowstone Park line to Emigrant is the most hazardous and only experienced river floaters should try it. The stretch of river from Emigrant to Livingston affords ideal float trips. The portion from Livingston to Hunter's Hot Springs and from Hunter's Hot Springs to Big Timber is not very popular because of the low aesthetic values.

NORTHEAST MONTANA

Fort Peck and Missouri:

Fort Peck Lake and the Missouri River are ideal for the boatmen. Individual cruises of nearly any duration or length can be taken. How-

ever, since the area is very sparsely settled, it would be necessary to be well equipped and let someone know the approximate time you expect to arrive at your destination. It must also be remembered that Fort Peck is a very large body of water and can be extremely dangerous. Winds there can form waves powerful enough to swamp large boats. So use some old-fashioned horse sense while on the lake and keep your weather eye open.

The Missouri River Cruise sponsored by the Fort Peck Yacht Club is becoming increasingly popular. This cruise is held each year during the first part of June. Some 130 miles of scenic country is covered between Fort Benton and Fort Peck. Five and one-half or six days are required for



A floater's paradise — cool, green mountains and fighting trout in the Swan River.

—Photo by Bill Browning

the unique journey. Between 20 to 25 boats from various parts of the United States have made the trip each year and interest is growing. This is a well-organized trip and application for participation should be made well in advance.

NORTHWEST MONTANA

Kootenai River:

There is one portion of the Kootenai River that all boatmen should stay away from! This is the Kootenai Falls area between Troy and Libby.

Other floatable areas of the river flow through rugged, scenic country and provide good fishing during late

summer and fall. Presently, there are no facilities on the river for renting of boats.

Clarks Fork River:

The Clarks Fork River is not presently recommended for float trips. Fishing is not presently considered good. Power dams along the river present about the only hazards.

North Fork, Flathead:

The north fork of the Flathead winds through scenery of unexcelled beauty. Several guest ranches rent boats in the area and there's plenty of good fishing.

Middle Fork of Flathead Above Bear Creek:

This trip is hazardous and should be undertaken with caution and only by seasoned boaters! Much of the river winds through wild country where there are no roads and few people. Anglers will be rewarded with some excellent fishing.

Middle Fork of Flathead Below Bear Creek:

The middle fork sports some pretty swift water and it would be advisable for the inexperienced not to try it on their own. Boats may be obtained from several guest ranches in the area. Fishing is fair, the scenery is beautiful, and the crystal water is like that seen only in Montana.

South Fork of the Flathead:

On this stretch of water there are some bad spots between Black Bear and Meadow Creek. **Inquire locally before attempting a float trip.**

Part of the river is in a wilderness area and flows through beautiful and quite inaccessible country. Be certain you have the proper equipment and know-how to cope with any contingency.

Main Flathead River Above Flathead Lake:

This stretch of river is not hazardous and provides good fishing and beautiful scenery.

Swan River:

The Swan River is not hazardous but take along some mosquito lotion to insure comfort. Very often there is quite a bit of downed timber and log jams on the Swan. The axe is helpful, but many areas still require portage. Downed timber and submerged logs could puncture rubber boats. A paved highway parallels the river, but you cannot see the stream from the highway.

THE LYNX - A FURBEARER

By Fletcher Newby

Leader — Fur Resources, Predator and Bear Investigations

One of Montana's rarest forest dwellers, the Canada lynx, received a raise in status from the 1959 legislature. Effective July 1, 1959, the Canada lynx will be a fur-bearer instead of a predator.

The Canada lynx, because of its scarcity and preference for remote areas, is not important as a predator on livestock and game. Many small mammals and birds are eaten but the most common item in the diet is the snowshoe hare. The lynx depends upon the snowshoe to the extent that lynx numbers vary directly with the abundance of this prey species.

Canada lynx furs are valuable. At the February sale of one of the large Seattle fur houses, lynx pelts averaged \$15.85 and the best lot brought \$26.00 per pelt. Open seasons on lynx usually will coincide with open seasons for marten since the two species inhabit much the same country.

Scarcity of the lynx is reflected in total catch figures calculated from the reports of licensed trappers for the past seven years. The average annual catch during this period was 19 lynx. In contrast, bobcat catch figures for the same period averaged 1,000 per year. The true number of lynx taken by licensed trappers may be even lower than this calculated



The Canada Lynx is one of Montana's rarest forest dwellers.

average catch. Some of these reports of Canada lynx come from outside the known range for the species and may well represent mistaken identification of bobcats.

Classification of the Canada lynx as a fur-bearer means that anyone who traps or shoots a lynx must have a trapping license. This brings legal problems to those who hunt or trap predators without a hunting license unless they can readily distinguish between the bobcat and the lynx. Canada lynxes accidentally killed in trapping for predators should be turned in to the nearest warden without delay. Because of the scarcity of the Canada lynx, few people will actually face this problem.

For the benefit of those who may need to distinguish between the bobcat and the Canada lynx, the pictures and table included with this article describe the typical differences between the two cats. A given specimen may not be typical for a certain characteristic but there are enough distinctive differences to identify any individual up to considerable distances. The Canada lynx has been described as a bobcat on stilts wearing snowshoes. The lynx gives the impression of being larger than the bobcat but this is chiefly because of longer hair, longer legs and larger feet. There is not much difference in average body weights. Most adult bobcats and Canada lynxes will weigh between 20 and 35 pounds.

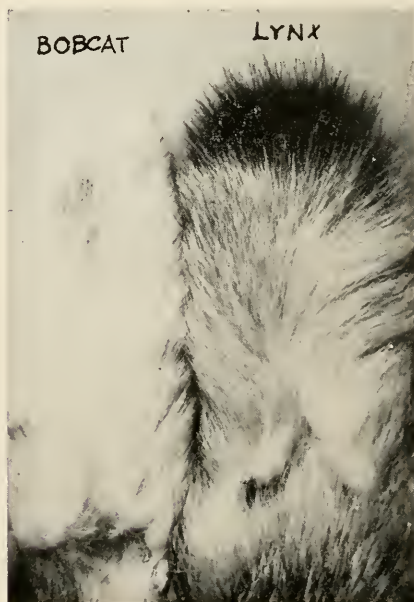
Part of the confusion over the distinctions between a bobcat and a Canada lynx comes from the common names applied to the bobcat. The bobcat is also called bay lynx, wild cat and lynx-cat. The so-called lynx-cat is a fur trade name for large, well-furred, gray bobcats. Bobcats with shorter fur and reddish color are often called "wild cats" by the fur trade.

The Canada lynx inhabits the denser forests at medium to high elevations. It is common only in local areas in the northwestern part of the state. The bobcat is found throughout the state in varying abundance. In the mountains the bobcat prefers the more open forests at lower elevations. The bobcat often replaces the lynx in logged-over areas. Apparent-



The upper photo illustrates the top of a bobcat and lynx tail. The lower photo shows the underside of the same tails. Note the definite barred appearance of the bobcat tail in the upper photo and the conspicuous lack of the black tip on the underside of the bobcat's tail.

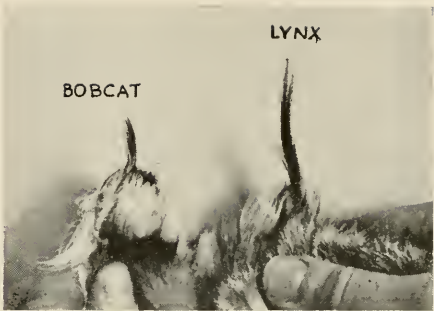
—Photos by Hector LaCasse



ly the bobcat adjusts more readily to man's activities and is not as specialized in food habits.

Though their pelts are valuable, the Canada lynx will never be important as a commercial fur-bearer in Montana. The important thing is to perpetuate this rare wildlife species for future generations to know and enjoy. Man's activities have eliminated the fisher and the kit fox from Montana and have reduced the black-footed ferret and grizzly bear to the status of endangered species. In the Canada lynx we have an opportunity to prevent such a loss before it is too late.

At present, trapping is not a threat to preservation of the Canada lynx. The Montana Fish and Game Commission now, however, has the authority to regulate or even close the seasons should this be necessary to



Ear tufts of the lynx (right) are much longer than those of the bobcat (left).

—Photo by Hector LaCasse

protect the lynx. Extensive logging of lynx habitat is far more detrimental than regulated trapping. Increasing demands for wood products may mean that only in the wilderness areas of our national forests and national parks will animals such as the Canada lynx, wolverine, marten and grizzly bear find their required habitats.

Character-

istics	Bobcat	Canada Lynx
Ears	With short to medium-length tufts (up to 1 inch), backs of ears black, usually with gray spot.	With long tufts (to 2 inches or more), backs of ears gray, edged in black.
Face	Small ruff about the face.	Pronounced ruff about the face.
Legs	With black spots and bars.	Long, heavy, without spots or bars.
Feet	Small, black underneath, pads bare.	Large, broad, pads heavily furred, light-colored.
Tail	Tip black on top only, preceded by one or two black bars.	Tip black all around, not preceded by black bars.
Color	Grayish to reddish brown above. Grayest in winter, redder in summer. Underparts light buff to white with distinct spots and bars.	Pale, grizzled gray. Palest in winter, browner in summer. Underparts mottled with white, gray and black hairs, no distinct spots or bars.

Game Management Based on Facts

By Glen F. Cole, State Range Biologist

Within the organization of the Montana Fish and Game Department, game managers and project biologists have the responsibility of obtaining factual information which can be used to manage game. Such information is gathered from systematic field surveys and research investigations. Our recent entry into the space age has helped pave the way for public acceptance of this scientific approach to game management. However, support for management based on facts hinges on whether or not the public is willing to rely upon technically trained game men.

Qualifications for game manager and biologist positions with the Montana Fish and Game Department are some of the most stringent in the United States. Six or more years of university or college training with the receipt of both bachelor and master of science degrees in wildlife management are required for probationary employment as a biologist. Such training represents a personal investment of over \$10,000. Further in-service training and experience are required to achieve permanent status with the department and to progress into the higher grades of biologist and game manager positions.

The hiring of technically-trained men by state and federal agencies has resulted in game management becoming an established profession.

Service to the public is guided by rigid professional standards. This is in the best public interest, since the professional game man is obligated to present management recommendations based upon facts regardless of political considerations or prejudices. Recommendations by professional game men occasionally conflict with those by public groups. Such conflict does not always win popularity contests for the game manager or biologist. However, it should be recognized that a professional game man would not be doing his job if he altered his recommendations simply to obtain a favorable public reaction.

Professional recommendations conflict with those made by public groups most frequently in deer and elk management programs. This conflict results from the public not being familiar with the factual information which serves as the basis for the recommendations by professional game men. This report shall present some of the basic considerations in deer and elk management and explain how factual information is obtained and used in a management program.

Management Considerations

The first and foremost consideration in deer and elk management is the food supply on the range areas which these animals use during the



Excellent condition bunchgrass on an elk winter range. Ranges in this condition support the greatest number of harvestable animals.

winter. Food supplies are most limited during this season. The forage plants which serve as the food supply on a winter range must be maintained in a healthy condition. Plants in this condition will produce the greatest amount of forage and thereby support the greatest number of animals. Attempts to carry more deer and elk than a range food supply will support will result in damage to plants. This reduces plant forage production and consequently the number of animals which can be supported on a range. The recovery of damaged food plants to full production is relatively slow. If food supplies are adequate, game herds can more than double their size within a short period of two or three years.

Greater hunter harvests and more recreational hunting are obtained when deer and elk populations are kept in balance with winter food supplies. Production of young animals is two to three times greater on ranges where deer and elk have ade-

quate winter food supplies than on ranges where the animals are contending with food shortages. Moreover, the survival of young through their first winter can be practically zero without adequate food and almost 100 percent with adequate food. Excessively high deer populations, such as occurred on many of Montana's winter ranges between 1948 and 1952, may occur for a short period; but as the animals overuse and destroy their food plants they are automatically reduced to the number that a deteriorating food supply will support. This is not sound game management and if man does not intercede with greater harvests (which we have done) the animals will eventually destroy their own food supply. This brings up an important management concept which is: Harvests of surplus game animals (those in excess of the number which can be supported on a range) are necessary to assure both the welfare of game and the maximum production of animals for hunters.

INFORMATION FOR MANAGEMENT

Information for management is primarily from three sources: (1) range surveys, (2) population trend surveys, and (3) hunter harvest surveys. These surveys are conducted each year. Additional information for management is obtained from research on game habits and management techniques. Such research serves as the basis for solving special problems or improving survey methods.

Range Surveys

Range surveys are conducted after deer and elk have ceased to use their winter ranges—between March and May in various parts of the state. The amount of use on plants which are important deer or elk foods and the effects of this use on future forage production are measured. Domestic livestock use is also measured if they are using the same food plants as game and the range area is on public land. Range survey methods have been developed by research investigations. The amount of use which will permit forage plants to remain in a productive condition has been established. Measurements showing the effects of animal use on plant production are compared from year to year. Such measurements indicate if plant forage production is less, about the same, or more than in previous years. Figures on the amount of forage plant use and the trend in their forage production provide a reliable



To provide a sound basis for their management recommendations, technically-trained men measure the condition and amount of game use on thousands of browse plants each year.

basis for determining if a game population is in balance with a range food supply.

Population Trend Surveys

Various methods are used in making population trend surveys. All are designed to indicate year-to-year changes in the size of game populations rather than to determine total game numbers. The most commonly used method involves the classification of a large sample of game animals by sex and age. Ratio expressions of young, per 100 adults or 100 females, are calculated to indicate the productivity or rate of increase of a game herd. Another commonly used method converts figures on pellet groups per acre to deer or elk days of use per acre. This method reflects year-to-year changes in the relative number of game animals using a range area.

Methods which would provide reliable figures on total game numbers are too time-consuming and costly to be practical for routine management. Close approximations of total elk numbers are obtained from aerial counts of certain herds, but this is accomplished only during occasional years when the animals are forced out of timbered areas by severe winter weather. If and when figures from aerial counts are compared to indicate year-to-year trends in elk population size, extreme care is taken that the weather and snow conditions at the time of each count were similar.

Hunter Harvest Surveys

The number of deer and elk harvested each year is determined by a statewide hunter questionnaire. Questionnaires are mailed to a sample of the persons who bought big game licenses. Answers on returned questionnaires are tabulated by business machines and the number of game animals harvested in the state is calculated by statistical procedures. Harvest figures are also calculated for each of the seven state management districts and for each of the numbered management units within a district. The success of hunters is also computed on a state-wide, district, and management unit basis.

Supplemental harvest information for local areas is obtained from hunter check stations. In addition to obtaining harvest figures, hunter check stations are used to obtain information on the weights, ages and condition of game animals.

THE MANAGEMENT PROGRAM

A management program involves (1) the collection of factual information, and (2) the use of this information in management. From the foregoing part of this bulletin it can be seen that factual information is being obtained from the surveys which are conducted each year. Range surveys provide information for determining if game populations are in balance with the all-important winter food supply. Population trend surveys provide information for determining yearly changes in game population size and productivity. Hunter harvest surveys provide information on hunter success and the number of game animals harvested in management districts and units. It is obvious that the information from these surveys provides a reliable basis for recommending sound management practices.

The department's 12 district game managers and biologists spend a total of about 3,000 working days each year gathering and preparing information for management. Additional material from range surveys is supplied by a large force of Forest Service personnel who work with the department on a cooperative basis.

As stated earlier, the use of factual information in a management program hinges on whether the public is willing to rely upon the technically trained game man. Game managers and biologists can only recommend management practices which survey information shows to be desirable or necessary. Final decisions are the



Willow browse greatly reduced by overuse on an elk winter range. Note the willow inside the game-proof fence.

responsibility of a five man commission which is responsible to the public. These officials can use factual information as the basis for decisions only to the extent that such decisions would be acceptable to the public. Over the past seven years, public support of commission decisions has led to Montana having an outstanding deer and elk management program. Montana has become the leading deer state in the nation and is only slightly below Idaho as the leading elk state.

RESULTS OF MANAGEMENT

The results of Montana's deer and elk management program are illustrated by hunter harvest information from the past 11 years. This information is shown in table 1.

Deer Management

The figures in table 1 show that the number of deer harvested in Montana has increased each year from 1948 to 1957. However, it should be noted that marked increases in

the harvest first occurred after 1951. These marked increases resulted from changes in management practices. Prior to 1951, restrictive buck-only seasons led to conditions where, at best, only 43 deer could be harvested for every 100 big game licenses sold. From 1952 through 1954, buck-only seasons were replaced more and more by one-deer, either-sex seasons. Harvests increased each year and by 1954, 86 deer were harvested for every 100 licenses sold. From 1955 to 1957, one-deer, either-sex seasons were replaced more and more by two-deer, either-sex seasons. Harvests continued to increase each year and during 1957, 106 deer were harvested for every 100 licenses sold. Harvest regulations in 1958 were more restrictive than in 1957, with large areas of important deer range changing from two-deer to one-deer, either-sex seasons. Preliminary calculations of the 1958 harvest information show that despite the more restrictive regulations, harvests remained higher than any year pre-

vious to 1957. Also, despite a record number of license holders, the success of hunters was greater than any year previous to 1957.

The harvest figures from the past 11 years show that either-sex seasons have provided greater numbers of deer to Montana hunters. For seven consecutive years both the number of deer harvested and the success of hunters has been far greater with one- and two-deer, either-sex seasons than with previous buck-only seasons. This has happened in the face of an almost doubled number of hunters from 1948 to 1958. To top it off, far more bucks have been harvested during recent one- and two-deer, either-sex seasons than during buck-only seasons. Over 90,000 (two-thirds) of the 134,600 deer harvested in 1957 were bucks. Two-thirds of the 1958 harvest were also bucks. Only 39,000 deer were harvested in

1951, which was the greatest harvest with a buck-only season.

The reasons why either-sex seasons have provided more deer to hunters relate directly to winter food conditions. Previous buck-only seasons did not remove enough animals to prevent severe over-use on the browse plants which serve as the winter food supply. This resulted in reduced fawn production by does and poor survival of fawns through their first winter. Few young animals were being added to populations and prime adult animals were lost by starvation during some winters. Under these conditions, deer populations were declining. Declines would have continued at an accelerated rate if either-sex seasons had not been initiated. Such seasons, combined with a series of mild winters, temporarily halted or relieved severe over-use of food supplies on

TABLE 1

MONTANA DEER AND ELK HARVEST INFORMATION FROM 1948 TO 1958

Year	No. Big Game Licenses Sold*	No. Animals Harvested		No. Harvested Per 100 Lic. Sold	
		Deer	Elk	Deer	Elk
1948	78,464	29,500	9,600	37	12
1949	80,083	32,400	9,500	40	12
1950	88,158	38,300	11,300	43	13
1951	101,985	39,000	14,600	38	14
1952	118,181	53,800	6,400	45	5
1953	119,591	80,000	13,200	67	11
1954	123,259	84,300	13,400	68	11
1955	129,735**	100,000	14,400	77	11
1956	130,445**	100,500	11,700	77	9
1957	127,047**	134,600	12,800	106	10
1958	132,000**	116,000	12,200	88	9

* Includes resident \$3, non-resident \$100, and \$20 big game licenses.

** Non-resident, deer-only licenses excluded in calculating the number of elk harvested per 100 licenses sold.

many ranges. As a result of improved food conditions, fawn production and survival increased. Deer populations with adequate food supplies are capable of doubling their size from the production and survival of two years fawn crops. This explains why Montana hunters have been harvesting greater numbers of deer. In effect, fall hunter harvests have been substituted for winter die-offs from starvation and disease. Harvested animals are replaced each spring by the increased fawn production which results from carrying smaller but more productive herds on winter ranges.

The greater production and survival of young as a result of better food conditions also explain why hunters are now harvesting more adult bucks with either-sex seasons than with previous buck-only seasons. About half of each year's fawn crop are males and the maximum replacement of bucks in a deer population occurs only when fawn production and survival is high.

The present management program is designed to maintain harvests of over 100,000 deer each year. The primary objective of this program is to bring about the recovery of winter food supplies so that even greater numbers of deer can be provided for hunters in the future. However, it will not be possible to have easy deer for the roadside hunter and still have managed deer herds in balance with food supplies. Such deer were a symptom of severe over-use

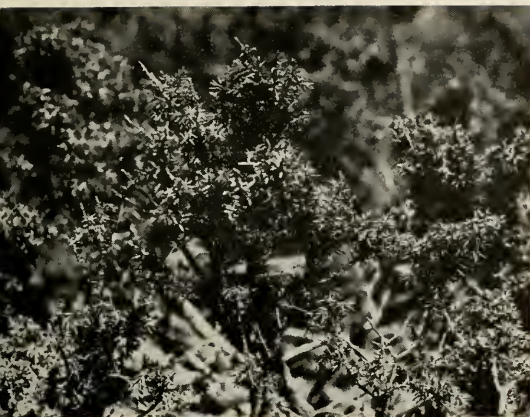


Example of abundant forage production on a properly used browse plant.

on winter food supplies and a repeat performance of past mistakes should be avoided at all costs.

The greatest mistake which could be made in deer management would be to return to buck-only seasons. Such seasons would cancel out all progress to date and would bring about the conditions existing before 1952. Winter food supplies would again be severely overused and it would only be a matter of a few years before hunter success and the number of deer harvested would be much lower than at present.

Surely, the past seven years of either-sex seasons have proven their worth by making Montana the leading deer state in the nation. Since young animals are now being added to deer herds at an increasing rate, we must continue such seasons if we are to maintain healthy, productive deer and prevent over-use of winter food supplies. One-deer, either-sex seasons should continue to be used in areas where only routine harvests



Example of reduced forage production on an overused browse plant.



Example of greatly reduced forage production on a browse plant dying from severe overuse.

were needed to keep deer herds in balance with winter food supplies. Two-deer, either-sex seasons should be used to point out areas where greater harvests were needed to bring deer herds into balance with food supplies. Only one out of four hunters harvested a second deer in 1958, but even this small increase in the harvest will aid in improving food conditions for certain deer herds.

ELK MANAGEMENT

Figures in table 1 show that greater numbers of elk have been harvested in recent years than in the past. A total of 77,700 elk were harvested from 1953 to 1958, giving an average harvest of about 13,000 animals per year. The average harvest per year from 1948 through 1952, was about 10,000 elk. Harvests in recent years have been sustained almost entirely from herds within the state. This was not the case prior to 1952 when substantial portions of

harvests were elk which migrated from Wyoming. Numbers of elk harvested per 100 licenses sold is low in comparison with deer. However, less than half of Montana's hunters actually hunt elk and of these about one out of four have been successful in recent years.

Competition with deer is an all important consideration in elk management. Food supplies on winter ranges will only support so many animals, and on certain ranges, decisions must be made as to whether deer or elk are to be favored in management. It is of greatest importance that Montana hunters recognize that increases in elk over the past years have been at the expense of food supplies for deer.

Elk management does not present the public relations problems that deer management does. Despite the fact that elk do not reproduce as fast as deer, hunters have no objection to, and even show a preference for, harvesting cows and calves. Elk

herds have more than maintained their numbers with either-sex hunting and it has even been necessary to establish special early or extended seasons to harvest surplus bull elk or obtain a desired harvest. As it is with deer management, elk herds must be kept in balance with their winter food supply to assure the maximum production and survival of young animals. This results in the greatest number of harvestable animals for the hunter.

PUBLIC RELATIONS

The facts show that the past seven years of deer and elk management have resulted in Montana hunters "never having it so good". Furthermore, with management based on facts, the people of Montana can be assured the game harvests will continue to remain at high levels. If we are successful in bringing the forage plants on winter ranges back to full production, even greater harvests will be possible in the future.

In view of the outstanding results of Montana's big game management program during the past seven years, there should be little call for the good old days or "horse and buggy" management. Unfortunately, this is not the case. Department personnel and management practices are under almost constant fire by individuals and groups who demand harvest regulations which would have disastrous effects on winter food supplies and future game harvests. Such demands can be effectively resisted

only if the department's management program is supported by an informed public. For this reason, department information and education representatives, game managers and biologists welcome opportunities to explain management programs to all organizations. Movies, color slides, charts and forum talks are used to present the factual side of game management.

In maintaining a big game management program, the Montana Fish and Game Department serves over 130,000 license buyers and numerous business establishments which sell goods and services to the hunting public. Department responsibilities also extend to persons who earn their living by agriculture and forestry. Game must be controlled by regulated hunting to prevent damage to crops and tree reproduction. Far too much is at stake anymore to permit game management to be based upon casual observations and opinions. The only sound basis for a deer and elk management program is the factual information which is obtained from yearly surveys of range conditions, population trends and hunter harvests. Such a program will need the active support of sportsmen's clubs and other organizations. We believe that the majority of the people in Montana want sound game management based upon facts, but those who favor this basis for management must make themselves heard.



THE FISH LAB IN MANAGEMENT

By Dick Graham, Fisheries Biologist

The job of a fish and game biologist may be broken roughly into three categories: (1) the field collection of data, (2) the analysis of data collected and (3) the application of information gained through analyses. The exacting chore of analyzing data often consumes far more time than collection does. Further, specialized, and sometimes expensive, equipment is necessary to do an adequate job.

Considering this, a centralized laboratory properly equipped and with readily available technicians is the most efficient method of handling data. The fisheries lab at Montana

State College in Bozeman is, consequently, the focal point for many Fish and Game Department projects.

Originally established during 1948 to conduct age and growth studies on fish, the lab has since expanded to include other projects. Age and growth studies remain one of the lab's most important responsibilities. Dick Graham, a fisheries biologist, was in charge of the laboratory from 1951 until May, 1959. Jack Heaton has recently filled the position.

To better illustrate some functions of the fisheries lab, we will describe a few projects under way there.



The annual growth rings are quite obvious in this photo of a magnified scale.

One study already mentioned is fish age and growth determination. The growth of fish may be compared to that of trees. Generally, both continue to grow throughout their lives, and each is strongly influenced by environmental forces. Under favorable conditions, both trees and fish may get much larger over a given period of time than they would in a less favorable environment.

Fish, like trees, usually grow more rapidly during warm summer months than during the winter. Differences between summer and winter growth rates are expressed by annual rings in fish scales. The rings are comparable to rings of tree growth; accordingly, the age and past rate of fish growth may be determined by interpreting the number and spacing between annual rings.

Scale samples collected by field biologists are sent to the laboratory along with other necessary information, such as length, weight, sex of fish, etc. Here, technicians make im-

pressions of suitable scales in strips of plastic. A micro-projector magnifies the impressions for study. Only the most experienced graduate students interpret the growth data.

A knowledge of the age and rate of fish growth is essential to proper fisheries management. From lab studies one can determine at what age fish spawn, at what age they reach a catchable size, and how long they live. The effectiveness of such management practices as stocking, regulations and habitat improvement may be evaluated by this means.

Another function of the lab is to classify and analyze fish food samples taken from stream beds. Animal life from given areas of stream beds (usually several square feet) are collected, preserved in formalin, labeled and sent to the laboratory. The animals are then separated into like groups, counted, and measured by volume.

Information gained from this data is used mostly in connection with studies on polluted water or in areas of potential pollution. As an illustration of the value of such studies, the technique proved very useful in determining effects on fish and fish food by forest spraying with DDT.

Occasionally, the laboratory undertakes studies of fish food habits. Field collected contents of preserved fish stomachs are removed, sorted, identified, and measured. These analyses provide information on the life history of fish and the relationships of various species to each other.



Dr. C. J. D. Brown examines some of the 50,000 fish specimens stored at the college.

A noted entomologist, Dr. R. C. Froeschner, is shown examining a portion of the college insect collection.

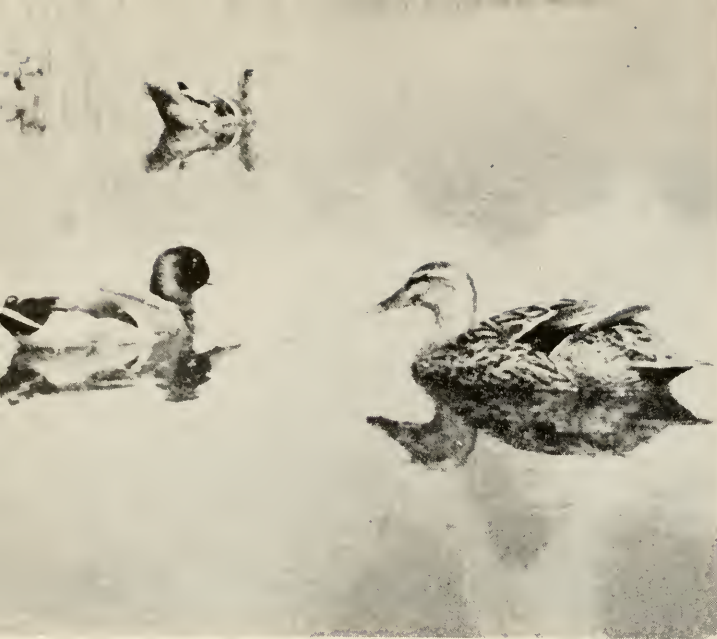


In their work the laboratory staff is fortunate in having expert advice from specialists at the college. A very extensive collection of fishes at the state college is available for reference to fisheries workers within the state. These collections have been accumulated over the past 12 years and now number more than 50,000 specimens representing more than 70 species. Collections have been made in all parts of Montana and intensive collecting was carried out during the past two years as a cooperative project by the Montana Fish and Game Department and the Montana Agricultural Experiment Station. This work is under the direction of Dr. C. J. D. Brown and will culminate in a bulletin of the fishes of Montana which will be available to anyone interested.

The extensive insect and plant collections at the college are also available for reference.

Additional responsibilities of the laboratory include liaison between fisheries fieldmen and the various departments of the college such as statistics, chemistry and engineering. Fishery graduate students subsidized by the Fish and Game Department on research projects are partially supervised by laboratory personnel.

The fisheries laboratory has proven itself a very important part of modern fisheries management. Its value will undoubtedly increase with the growing demands of our sporting nation.



Development Ducks and Hunters

By D. S. Stockstad,
Project Biologist

Migratory waterfowl winging their way south over the Ninepipe Game Management Area in the Flathead Valley last fall must have taken a couple of tight turns to make sure they weren't dreaming. Acres of waving grain flashed a golden "come and get it" sign and caused their southward push to be temporarily forgotten. As their far-carrying travel call changed into the excited chatter of feeding waterfowl, it was the hunters' turn to become excited.

Any of these hunters who had been following Montana's waterfowl development program must have realized that they were witnessing some of the embryonic indications of the program's unlimited possibilities. Certainly as they entered any of these development areas marked with signs declaring it to be a "Wild-life Management Area" and "Open to Public Hunting" they must have

realized that here, at least in part, was the answer to their future waterfowl hunting.

Why Development Projects?

Why has a development program become so important in waterfowl management? The answer to this question can be found in a brief review of the following facts:

1. Millions of acres of potholes and marshlands have been destroyed by the industrial and agricultural development of our continent.
2. Crop depredations by an increasing number of waterfowl have become a serious problem in many parts of the country.
3. Increased hunting pressure, resulting in formation of private hunting clubs and in leasing of choice hunting areas by private parties, has greatly reduced the number of hunting areas available to the general public.

Pothole and Marshland Drainage

Probably the most important of these three factors is that of pothole and marshland drainage. Waterfowl populations can be perpetuated only if they have places to feed and breed. Conversely, a sure way to destroy this waterfowl resource is by destroying their habitat. Man in America has been doing this since pioneer days. Drainage, water diversion, land leveling and other factors which destroy waterfowl habitat have, for the main part, been essential steps in man's progressive march through the years. However, water pollution, unwise drainage, and other land and water abuses have been tragic and unnecessary steps in land exploitation.

The unending shrinkage of waterfowl habitat can be partly offset by improving what still remains. Quality of habitat can now be emphasized as a substitute for former quantity. Converting poor marshland to good marshland has become practical insurance for the future of waterfowl.

Crop Depredations

Development programs have become necessary to alleviate the crop depredations by migratory and wintering waterfowl which have become a serious problem in many sections of the country. This problem is particularly acute in southern United States where the huge masses of wintering waterfowl congregate. California lettuce growers have reported losses of \$40,000 in one night's

raid. While this probably represents the extreme side of waterfowl depredations, there is little doubt that from the Canadian wheat farmers to the California lettuce growers, the cries of waterfowl crop depredations are on the increase. A partial solution to the problem seems to be in acquisition and development of lands in the proximity of the major resting and wintering areas.

Decrease of Public Hunting

Development programs have also become necessary to offset the shrinkage of public hunting areas. What returns could the waterfowler realize from programs and practices designed to increase the numbers of waterfowl if he were unable to take part in the annual harvest? The three billion dollars spent annually by sportsmen of the United States certainly justify the expenditure of a few thousand dollars to insure them a place to hunt. Acquisition of land for public hunting has thus become an important part of the waterfowl development program.

Montana's Development Program

This brief picture of the nationwide need for waterfowl development also applies to Montana. Recognizing this need, the Montana Fish and Game Department has undertaken the development of several areas. One of the most important projects in this program is being carried on at the Ninepipe Game Management Area.



Dwight Stockstad, manager of the Pablo and Ninepipe management areas, views progress of development with satisfaction.

—Photo by John Forssen

The Ninepipe Area

The Ninepipe Game Management Area, located in the Flathead Valley 50 miles northwest of Missoula, includes 3,000 acres that excel in diversified returns to the sportsman. The unique feature about this area is that many of these returns are made possible merely by the process of land acquisition.

This project lies within one of the best pheasant-producing areas in the western United States. It is ideally situated in a broad valley that offers a natural route for migratory waterfowl and also ranks as one of the finest waterfowl production areas. This breeding area not only produces thousands of ducks, but boasts a **resident** Canada goose population of about 1,500 birds. These geese make up approximately 50 percent of the total annual hunter kill of geese in the Flathead Valley.

Public Hunting Areas Increased

The postwar boom in the human population was a warning signal that public hunting areas must be provided if the average John Nimrod was going to have a place to hunt. As the numbers of hunters in the area increased, keen competition developed for lands adjoining such protected areas as the Federal Bird Refuge on Ninepipe Reservoir. Within a short time, practically all land bordering the refuge was owned by private hunting clubs or leased by a small group of hunters. The Montana Fish and Game Department could see that, if opportunities to hunt were to be equitably distributed among the paying public, something had to be done. Land acquisition in key areas was the answer.

Many a hunter lives for the days when he can climb into a goose pit.

—Photo by John Forssen





Like other Fish and Game Department projects, this ideal waterfowl area is supported by the hunter's dollar, not by general taxes.

—Photo by John Forssen

The amount of refuge boundary which has been made available to public hunting by this acquisition program illustrates this quite convincingly. Of a total of approximately nine miles of refuge boundary only 2.0 miles were open to public hunting prior to the project's initiation in 1953. As of January 1, 1959, an additional 5.5 miles had been opened to public hunting, which left only 1.5 miles of boundary unavailable to the general public.

Food and Cover Development

As the program expanded it became apparent that here was a development area which was in a large sense already developed, not only

for waterfowl, but upland game as well. Manipulation of food and cover was about all that was needed to transform the lands from a close-cropped, unproductive habitat for wildlife into a first-class breeding, feeding and hunting area.

Not a Taxpayer's Burden

An important factor to the general taxpayer is that the costs of the project are paid for by sportsmen. This revenue is derived from the excise tax on arms and ammunition and from the sale of hunting and fishing licenses.

An often-confused idea about these projects concerns their position in regard to tax loss to a county. The lands purchased by the Fish and Game Commission for these projects **are not** removed from the tax rolls. Assessment is made as on any private land and the county receives an equivalent payment in lieu of taxes.

Endorsed by Sportsmen and Game Birds

The increasing number of hunters using this area each year is evidence that this project has the approval of the hunting public. The massed flights of waterfowl feeding in the grain fields and the crowing of the cock pheasant as he struts saucily about his recently enlarged domain are evidence of nature's unwritten approval.

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